

REMARKS

Claims 1-20 have been examined, and claims 1-11 and 13-19 have been rejected under 35 U.S.C. § 103(a). Also, the Examiner has indicated that claims 12 and 20 contain allowable subject matter.

I. Rejection under 35 U.S.C. § 103(a) over Kitahara et al EP 0 827 838 (“Kitahara”), Barbehenn et al. U.S. Application No. 5,363,134 (“Barbehenn”), and Banno et al. U.S. Patent No. 6,060,113 (“Banno”)

Claims 1-10 and 13-19 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kitahara, Barbehenn, and Banno. Applicant submits that the claims are patentable over the references.

A. Claim 1

Contrary to the Examiner's statement, Applicant has not and does not acknowledge that Banno discloses “the adjusting of the driving pulse for ejecting the next droplet based on a correction signal which is derived from the deviation of the designed amount of ink and the actual ejected amount of ink of the previous droplet ejected from the same nozzle orifice.” Furthermore, the Examiner cannot (and does not) point to any statement in Applicant's papers that would constitute such an admission.

Applicant respectfully submits that the Examiner misunderstood Applicant's arguments. Applicant submits that Banno fails to disclose, teach or suggest “associating correction data with

the respective nozzle orifice identified by the ID data” as recited in independent claim 1. As shown in Figure 23 and described in Col. 29 and Col. 30¹, Banno seems to suggest a comparator 1605 that compares a received signal (output from the optical information detecting circuit 1604) with a reference signal. Then, the comparator 1605 outputs a difference signal corresponding to the difference between the received signal and the reference signal. (See col. 29, lines 55-57). The difference signal is applied to an ejection condition correcting circuit 1606, which calculates a correction signal and outputs the correction signal to an ejection condition controlling circuit 1607. (See col. 30, lines 2-8). The ejection condition controlling circuit 1607 then corrects the height and width of the driving pulse in accordance with the received signal correction signal and performs a second ejection operation. (See col. 30, lines 11-15).

However, there is absolutely no disclosure in Banno of associating correction data with a respective nozzle orifice. Also, there is no disclosure that the correction data is associated with the nozzle orifice by ID data. Absent from Banno is any disclosure or suggestion of using ID data to identify the nozzle orifice to which the correction data will be associated.

Furthermore, the optical information detecting circuit 1504 appears to constantly measure the intensity of reflected light in order to determine the thickness of a droplet. The thickness information determined by the optical information detecting circuit is then output to the comparator 1505. Contrary to the claimed subject matter which identifies the difference between a designated amount specified by a reference signal and a measured amount, Banno appears to

¹ Please note that the reference numbers utilized in the Banno specification with respect to Figure 23 do not match the reference numbers depicted in Figure 23.

monitor and measure the thickness of each droplet and does not appear to be based on a reference signal that is applied to a respective nozzle orifice identified by ID data.

In addition claim 1 states that a reference drive signal is provided to instruct a piezoelectric vibrator to jet a reference liquid droplet having a designated amount from a nozzle orifice. Furthermore, a difference between the designated amount and a measured amount of the liquid droplet is identified, and correction data is provided for reducing the difference so that the designated amount is jetted from the nozzle orifice.

In a simple, illustrative non-limiting embodiment of claim 1, assume that the designated amount is set to 50 ng and that the reference drive signal instructs the piezoelectric vibrator to jet a liquid droplet having such designated amount (i.e. 50 ng) from the nozzle orifice. If the measured amount of the droplet jetted from the orifice equals 47 ng, a difference of 3 ng is identified. In such case, the correction data is provided to reduce the difference so that the orifice jets an ink droplet having the designated amount (i.e. 50 ng).

On the other hand, in Banno, the correction data controls the sum amount of droplets ejected from a nozzle orifice such that the sum amount becomes constant. For example, if two ejecting operations of the Banno device are performed, the device may set a sum amount of 100 ng. In such case, if a first ink droplet having an amount of 53 ng is ejected, Banno's correction data instructs the device to eject a second ink droplet having 47 ng, so that the sum amount equals 100 ng. Accordingly, Banno does not suggest providing correction data for reducing the difference so that a designated amount is jetted.

Since Kitahara and Barbehenn do not cure the deficient teachings of Banno, Applicant submits that claim 1 is patentable.

B. Claim 2

Since claim 2 depends upon claim 1, Applicant submits that it is patentable at least by virtue of its dependency.

C. Claim 3

Since claim 3 contains features that are similar to the features discussed above in conjunction with independent claim 1, Applicant submits that it is patentable for at least such reasons.

D. Claims 4 and 5

Since claims 4 and 5 depend upon claim 3, Applicant submits that they are patentable at least by virtue of their dependency.

E. Claim 6

Since claim 6 contains features that are similar to the features discussed above in conjunction with independent claim 1, Applicant submits that it is patentable for at least such reasons.

F. Claim 7

Since claim 7 depends upon claim 6, Applicant submits that it is patentable at least by virtue of its dependency.

G. Claim 8

Since claim 8 contains features that are similar to the features discussed above in conjunction with independent claim 1, Applicant submits that it is patentable for at least such reasons.

H. Claims 9, 10, and 13-19

Since claims 9, 10, and 13-19 depend upon claim 1, 3, 6, or 8, Applicant submits that they are patentable at least by virtue of their dependency.

II. Rejection under 35 U.S.C. § 103(a) over Kitahara, Barbehenn, Bannō, and Bain U.S. Patent No. 4,521,786 ("Bain")

Claim 11 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kitahara, Barbehenn, Banno, and Bain. Since claim 11 depends on claim 8, and since Bain does not cure the deficient teachings of Kitahara, Barbehenn and Banno with respect to claim 8, Applicant submits that claim 11 is patentable.

III. Objection to claim 20

The Examiner has objected to claim 20 for being dependent upon a rejected base claim but indicates that it contains allowable subject matter. Since claim 20 has been rewritten in independent form, Applicant submits that the objection is overcome.

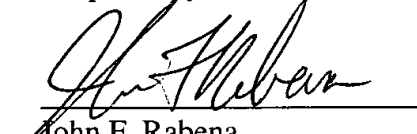
AMENDMENT UNDER 37 C.F.R. § 1.116
U.S. Appln. No. 09/816,770

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


John F. Rabena
Registration No. 38,584

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: November 5, 2003